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IS 8476 (1977): Method for determination of wool content in woollen textile materials [TXD 5: Chemical Methods of Test]



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IS : 8476 - 1977

Indian Standard

**METHOD FOR DETERMINATION OF
WOOL CONTENT IN WOOLLEN
TEXTILE MATERIALS**

UDC 677.31 : 677.014.248



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AMENDMENT NO. 1 DECEMBER 1988
TO
IS : 8476 - 1977 METHOD FOR DETERMINATION
OF WOOL CONTENT IN WOOLLEN TEXTILE
MATERIALS

(*Clause 6.0, line 2*) — Substitute '(see IS : 1070 - 1977†)' for '{ see IS : 1070 - 1960†)'.

(*Page 4, foot-notes*) — Substitute the foot-note marked with '†' mark by the following:

‘†Specification for water for general laboratory use (*second revision*).’

(*Clause 8.6*) — Delete.

(*Clause 9.1*) — Substitute the following for the existing clause:

‘9.1 Calculate the wool content for each test specimen as under:

$$\text{Wool content, percent} = \frac{a - b}{a} \times 100$$

where

a = oven-dry mass of the specimen, and

b = oven-dry mass of the residue.’

(TDC 5)

Indian Standard

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(Continued on page 2)

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IS : 8476 - 1977

(Continued from page 1)

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Indian Standard

METHOD FOR DETERMINATION OF WOOL CONTENT IN WOOLLEN TEXTILE MATERIALS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 13 June 1977, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 The method prescribed in this standard determines the total protein content in the woollen textiles materials. However, it does not necessarily mean that the protein content so determined is 'all wool'. It may also contain other protein fibres besides 'wool'.

0.3 A reference to IS : 1793-1973* may be made for definitions of textile materials containing wool.

0.4 In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated is to be rounded off, it shall be done in accordance with IS : 2-1960†.

1. SCOPE

1.1 This standard prescribes a method for determination of percentage of wool in all-wool textiles in any form, such as fibre, yarn, fabrics, druggets and carpets.

2. PRINCIPLE

2.1 A pretreated specimen of known oven-dry mass is dissolved in sodium or potassium hydroxide. The non-wool content, including burrs, seeds, etc, is oven-dried and weighed, and percentage of wool content is calculated therefrom.

*Guide for marking textile materials made of wool (*first revision*).

†Rules for rounding off numerical values (*revised*).

3. SAMPLING

3.1 Samples shall be so drawn as to be representative of the lot. A sample drawn in accordance with the procedure laid down in the material specification or as agreed to between the buyer and the seller, shall constitute the test sample.

4. ATMOSPHERIC CONDITIONS FOR CONDITIONING

4.1 Condition the test specimen to moisture equilibrium in the standard atmosphere of $27 \pm 2^{\circ}\text{C}$ temperature and 65 ± 2 percent relative humidity (*see also* IS : 6359-1971*).

5. APPARATUS

5.1 Soxhlet Apparatus

5.2 Sintered Glass Crucible No. 1

5.3 Desiccator

5.4 Weighing Balance — capable of weighing to an accuracy of 10 mg.

5.5 Drying Oven — capable of maintaining a temperature of $105 \pm 3^{\circ}\text{C}$ and preferably fitted with weighing balance.

6. REAGENTS

6.0 Quality of Reagents — Unless specified otherwise pure chemicals shall be employed in test and distilled water (*see* IS : 1070-1960†) shall be used wherever the use of water as a reagent is intended.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the test results.

6.1 Sodium or Potassium Hydroxide Solution — 5 percent (*m/v*).

6.2 Benzene-Methyl Alcohol Mixture (3 : 2).

6.3 Acetic Acid Solution — 3 percent (*v/v*).

7. PREPARATION OF TEST SAMPLE

7.1 Take the sample weighing about 30 g and cut it into pieces, if necessary. Put it in the Soxhlet apparatus and extract with benzene-methyl alcohol mixture for two hours at a minimum rate of six cycles per hour. Allow the solvent to evaporate and then wash the sample in water (about 500 ml) at 50°C for 30 minutes.

*Methods for conditioning of textiles.

†Specification for water, distilled quality (*revised*).

8. PROCEDURE

8.1 Take a representative specimen weighing about 5 g from the prepared sample and place it in a suitable container. Place the specimen in the drying oven maintained at a temperature of $105 \pm 3^\circ\text{C}$ and dry it to a constant mass.

NOTE — The mass shall be taken as constant when the difference between the two successive weighings made at intervals of 20 minutes is less than 0.05 percent.

8.2 Determine the mass of the specimen without removing it from the oven. In case the drying oven is not provided with the weighing balance, remove the specimen from the oven and transfer it to a weighing container of known mass provided with a tight lid. The transference of the specimen shall be done in as less a time as possible. Cool the specimen and the container in a desiccator to room temperature before weighing. Weigh the container and determine the mass of the specimen to an accuracy of 10 mg.

8.3 Put the specimen in a beaker together with 500 ml of 5 percent sodium or potassium hydroxide solution and boil slowly until the wool fibres dissolve. After 10 minutes of boiling, filter through a sintered glass crucible. Wash the residue first with warm water, then with acetic acid solution and finally with hot water. Dry the residue at $105 \pm 3^\circ\text{C}$.

8.4 Examine carefully the residue and the pores of the crucible for incompletely dissolved wool. If it is present dissolve it by pouring sodium or potassium hydroxide solution. Rinse and dry the residue at $105 \pm 3^\circ\text{C}$ to constant mass (see Note under 8.1) and weigh it to an accuracy of 10 mg.

8.5 Similarly test at least two more test specimens.

8.6 Simultaneously take another sample of approximately 5 g and condition it to moisture equilibrium in standard atmosphere. Determine its mass (x), then dry it oven as in 8.1 and determine its oven mass (y) as in 8.2. Calculate the moisture regain, percent (R) of the sample as follows:

$$R = \frac{x - y}{y} \times 100$$

9. CALCULATION

9.1 Calculate the wool content for each test specimen as under:

$$\text{Wool content, percent} = \frac{(a - b)(100 + 13.6)}{a(100 + R)} \times 100$$

IS : 8476 - 1977

where

a = oven dry mass of the specimen (*see* 8.2);

b = oven dry mass of the residue (non-wool content) (*see* 8.4);
and

R = moisture regain, percent (*see* 8.6)

NOTE — 13.6 is standard moisture regain for wool.

9.2 Calculate the average wool content of all the test specimens.

10. REPORT

10.1 The report shall include the following:

- a) Type of material;
- b) Average wool content, percent; and
- c) Number of test specimens.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 1 kg·1 m/s ²
Energy	joule	J	1 J = 1 N·m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V·s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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